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It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.



M-2052/0505

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UNPACKING INSTRUCTIONS

UNPACKING INSTRUCTIONS

Remove the Packing List and verify that you have received all equipment, including the following (quantities in parentheses):

Ultrasonic Level Measurement System (1)

Operator's Manual (1)

If you have any questions about the shipment, please call the Omega Customer Service Department. When you receive the shipment, inspect the container and equipment for signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

Note:

The carrier will not honor damage claims unless all shipping material is saved for inspection. After examining and removing contents, save packing material and carton in the event reshipping is necessary.



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SYSTEM DESCRIPTIONS

GENERAL DESCRIPTION

These series of Liquid Level Detection systems are ideal, low cost ultrasonic liquid level detection systems for many applications. They operate in a broad spectrum of viscous to light liquids.

PRINCIPLES OF OPERATION

The LL-10 Series operates using ultrasonic sound wave propagation. Ultrasonic sound waves are greatly attenuated when transmitted through air. Conversely, when liquid is present, transmission of the sound waves is greatly enhanced. The electronic control unit generates electrical signals that are converted to bursts of ultrasonic energy at the sensor. The ultrasonic bursts are transmitted across the liquid sensing gap. Upon receipt of a valid signal, the solid state electronics generate a "data enable" condition indicating liquid is present. This signal energizes a relay and/or provides an output condition.

NOTES:

1. Standard Sensor Material: 316 Stainless Steel. Solid one piece molded body Tefzel is also available.
2. 3/4" NPT mounting is standard, different NPT and flanges are optional.
3. Standard length of the sensor is 2.50" with activation point 1/4" from the bottom of the sensor. Extension up to 100" is available.



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3 INSTALLATION

FINAL INSTALLATION

Follow the instructions below:

1. Drill a suitable hole in the vessel or pipe wall and tap for 3/4" NPT. If this walled vessel or material is not suitable for threading, weld or braze a bushing to accept the sensor.
2. Screw the sensor in the threaded section and make sure that there is a good seal. Use a pipe compound or sealing tape to avoid excessive tightening. Do not over tighten.
3. Run the power and control wiring cable to the electronic control unit.

Observe all applicable electrical codes and proper wiring procedures.

MAINTENANCE

Electronics are constructed with solid state components and epoxy potted. Periodically, check and clean the sensor when used with liquids which cause a coating build up on the sensor. No other maintenance is required.

CLEANING

If the pipe or vessel to which the sensor is mounted is to be steam cleaned or cleaned with abrasive detergents, remove the entire unit before cleaning by:

1. Disconnecting the power at source;
2. Opening the housing cover;
3. Removing power and control wiring cables;
4. Unthreading the sensor.

To reinstall, follow Installation Procedures

SYSTEM MALFUNCTION

Should the system malfunction, notify Omega immediately.

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ORDERING INFORMATION

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| MODEL | SENSOR MOUNTING | SENSOR MATERIAL | ELECTRONICS INPUT | ELECTRONICS OUTPUT |
|---------|-----------------|-----------------|-------------------|--------------------|
| LVU-701 | 3/4" NPT | 316LSS | 6VDC-24VDC | 1 AMP SPDT Relay |
| LVU-703 | 3/4" NPT | Tefzel | 6VDC-24VDC | 1 AMP SPDT Relay |
| LVU-704 | 3/4" NPT | 316LSS | 6VDC-24VDC | 2 Wire Loop Power |
| LVU-707 | 3/4" NPT | Tefzel | 6VDC-24VDC | 2 Wire Loop Power |

| MODEL | SENSOR MOUNTING | SENSOR MATERIAL | ELECTRONICS INPUT | ELECTRONICS OUTPUT |
|---------|-----------------|-----------------|-------------------|--------------------|
| LVU-705 | 1/4" NPT | 316LSS | 6VDC-30VDC | 2 Wire Loop power |
| LVU-706 | 1/4" NPT | 316LSS | 6VDC-30VDC | 1 A SPDT Relay |

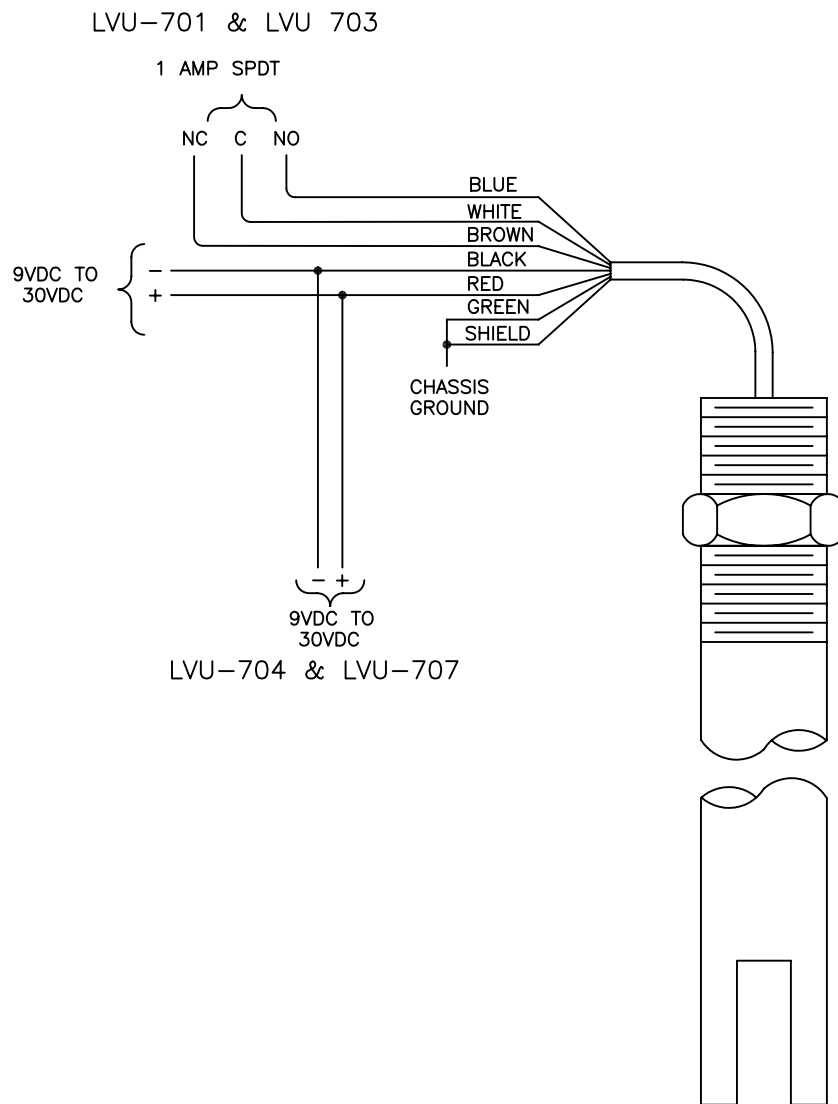
| MODEL | SENSOR MOUNTING | SENSOR MATERIAL | ELECTRONICS INPUT | ELECTRONICS OUTPUT |
|----------|-----------------|-----------------|-------------------|--------------------|
| LVUD-101 | | EPOXY | 6VDC-30VDC | 2 Wire Loop Power |

Call OMEGA For Special Optional Features

APPLICATIONS: *Pump Protection • Storage Tanks • Compressors
 • Hydraulic Supply Lines • Semiconductor • Boiler Water Cutoff
 • Sewage Systems • Pipe Lines • Medical*



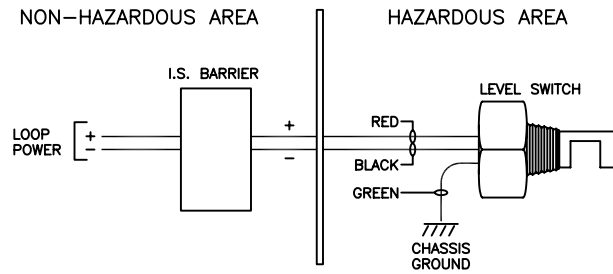
SYSTEM WIRING DIAGRAM



SYSTEM WIRING DIAGRAM

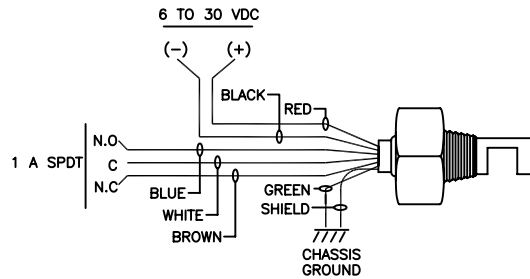
LOOP POWER OPTION

LVU-705

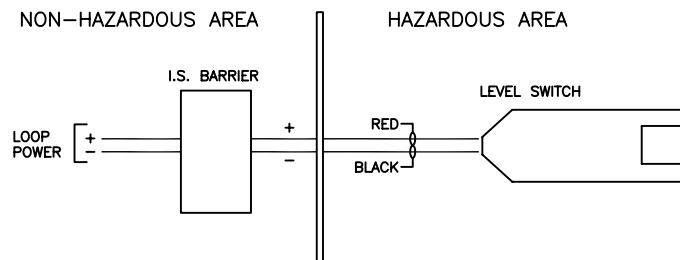


RELAY OPTION

LVU-706

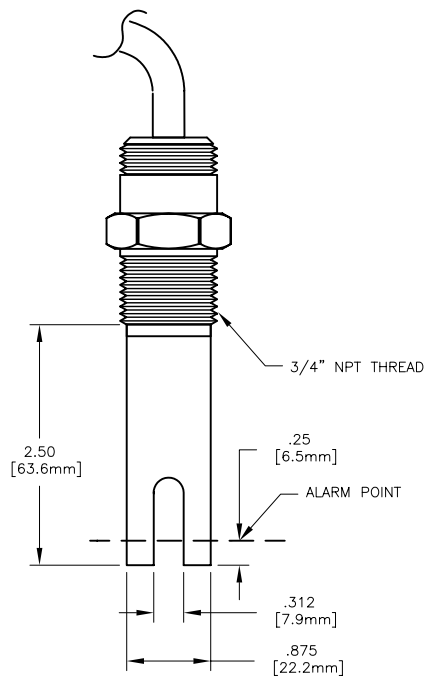


LVUD-101

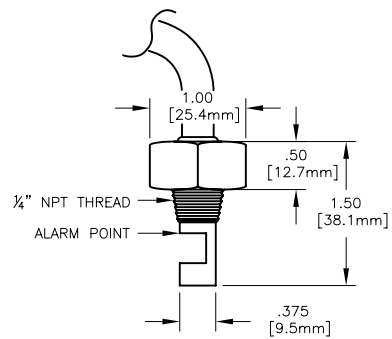


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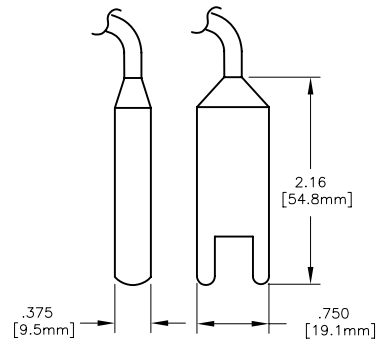
DIMENSIONAL DRAWINGS



MATERIAL: 316L SS & TEFZEL



MATERIAL: 316L SS



MATERIAL: EPOXY



WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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